

Clinicopathological Profile of Benign Soft Tissue Tumours: A Study in a Tertiary Care Hospital in Western India

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ABSTRACT

Introduction: The incidence of soft tissue tumours, especially the frequency of benign tumours relative to malignant ones, is nearly impossible to determine accurately. Benign soft tissue tumours outnumber malignant tumours by a wide margin.

Objectives: The main purpose of this study was to look into the clinicopathological profile of benign soft tissue tumour in terms of hospital incidence of age, sex, site distribution and comparison of histological types of benign soft tissue tumours with other similar studies.

Materials and Methods: The operated specimens or biopsy material of benign soft tissue tumours received from January, 2010 to July, 2010 in the Department of Histopathology of our hospital, were studied in detail. Age and sex incidence, site of

lesion, clinical features, gross and microscopic appearance were carefully studied.

Results: In our study, most common benign soft tissue tumour was lipoma (50.8%) followed by hemangioma (17.5%) which in turn was followed by neurofibroma, angiofibroma & schwannoma. Most common age group for benign soft tissue tumour were 31-40y (27.5%) followed by 21-30y (22.5%). Overall a male predominance was seen with 60.83% in males. The most common site of occurrence of benign soft tissue tumour overall was found to be trunk (25%), followed by upper extremities (21.7%), lower extremities (17.5%) and nose and nasopharynx (10.8%) in that order.

Conclusion: With our study, we were able to reassess the clinical profile of soft tissue tumours and their different types with respect to age, sex, site distribution.

Keywords: Benign soft tissue tumours, Clinicopathological profile, Hemangioma, Lipoma

INTRODUCTION

Soft tissue tumours are a highly heterogeneous group of tumours that are classified on a histogenetic basis according to the adult tissue they resemble. Within the various histogenetic categories, soft tissue tumours are usually divided into benign, intermediate and malignant forms. Benign tumours, which more closely resemble normal tissue, have a limited capacity for autonomous growth. They exhibit little tendency to invade locally and are attended by a low rate of local recurrence following conservative therapy.

Benign mesenchymal tumours outnumber sarcomas by a factor of at least 100. The annual clinical incidence (number of new patients consulting a doctor) of benign soft tissue tumours has been estimated as up to 3000/million population [1]. The fact that many benign tumours, such as lipomas and hemangiomas, do not undergo biopsy makes direct application of data from most hospital series invalid for the general population.

Most patients with suspected soft tissue neoplasms present with a painless mass, although pain is reported in one-third of cases [2]. Delay in diagnosis is common; the most common misdiagnoses include post-traumatic or spontaneous hematoma and "lipoma."

Benign tumours of soft tissue are commoner than benign tumours of bone. They can occur at almost any site, both within and between muscles, ligaments, nerves, and blood vessels. These tumours vary widely in appearance and behaviour.

The purpose of our study was to evaluate the benign soft tissue tumours in relation to different age groups, sex and site distribution and to compare the obtained data with those obtained in other series by different authors.

MATERIALS AND METHODS

The operated specimens or biopsy material of benign soft tissue tumours received from January, 2010 to July, 2010 in the Department of Histopathology of our hospital, were studied in detail. Total 120 cases were collected. Only mesenchymal lesions originating in soft

tissue were included in the study. Intra abdominal and retroperitoneal lesions were also included when the lesions were not thought to originate in bowel or abdominal viscera. Lesions arising in the chest and abdominal walls were also included. Age and sex incidence, site of lesion, clinical features, gross and microscopic appearance were carefully studied.

The gross descriptions of the specimen were collected from records. All specimens were fixed in 10% formalin for 24 h. The sections were cut meticulously and stained with hematoxylin and eosin (Harris hematoxylin).

RESULTS

Most common benign soft tissue tumour in our study was lipoma (50.8%) followed by hemangioma (17.5%) which in turn was followed by neurofibroma, angiofibroma & schwannoma in that order [Table/Fig-1].

Most common age group for benign soft tissue tumour were 31-40 y (27.5%) followed by 21-30y (22.5%). Lipoma was most common in age group 21-50 y with a maximum cases i.e. 37.7% clustering in age group 31-40 y & mean age of occurrence being 37.6 y. Hemangioma showed maximum occurrence (71.43%) in age group 0-30 y with mean age 25.66 y. Neurofibroma was common in age group 21-50 y with mean age 37.7 y. Angiofibroma was found in age group of 11-30 y with maximum cases i.e. 71.42% in age group 11-20 & mean age 17.28 y. Schwannoma occurred with mean age 38.5 y. Benign Fibrous Histiocytoma was found in age group 11-40 y with mean age of 24.8 y. Neuroma was found in age group 11-30 y with mean age of 24.6 y. Giant cell tumour of tendon sheath was found in age group 11-40 y with mean age of 30 y. Lymphangioma was found in age group 31-40 y with mean age of 39 y. Only one case each of ossifying fibromyxoid tumour, nodular fasciitis & aggressive angiomyxoma was found [Table/Fig-2].

In short the trend suggests that angiofibroma was prevalent in comparatively younger age groups, whereas neurofibroma,

Serial. No.	Diagnosis	No. of cases	Percentage
1.	Lipoma	61	50.8
2.	Hemangioma	21	17.5
3.	Neurofibroma	9	7.5
4.	Angiofibroma	7	5.8
5.	Schwannoma	6	5.0
6.	Benign Fibrous Histiocytoma(BFH)	5	4.2
7.	Neuroma	3	2.5
8.	Giant cell tumour(GCT) of tendon sheath	3	2.5
9.	Lymphangioma	2	1.7
10.	Ossifying fibromyxoid tumour	1	0.8
11.	Nodular fasciitis	1	0.8
12.	Aggressive angiomyxoma	1	0.8
Total		120	100.0

[Table/Fig-1]: Distribution of the subjects according to mri pattern and asia grading at initial presentation

S. No.	Diagnosis	Age group in years								Total
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	
1.	Lipoma	2	3	13	23	14	5	1	0	61
2.	Hemangioma	5	5	5	1	1	2	2	0	21
3.	Neurofibroma	1	1	2	1	3	0	0	1	9
4.	Angiofibroma	0	5	2	0	0	0	0	0	7
5.	Schwannoma	0	2	0	2	0	1	1	0	6
6.	Benign Fibrous Histiocytoma	0	2	2	1	0	0	0	0	5
7.	Neuroma	0	1	2	0	0	0	0	0	3
8.	Giant cell tumour of tendon sheath	0	1	0	2	0	0	0	0	3
9.	Lymphangioma	0	0	0	2	0	0	0	0	2
10.	Ossifying fibromyxoid tumour	0	0	0	1	0	0	0	0	1
11.	Nodular fasciitis	0	0	1	0	0	0	0	0	1
12.	Aggressive angiomyxoma	0	1	0	0	0	0	0	0	1
Total		8	21	27	33	18	8	4	1	120

[Table/Fig-2]: Age incidence with respect to different benign soft tissue tumours

schwannoma, lymphangioma in late third decade. Benign Fibrous Histiocytoma & neuroma fall in between.

Overall benign soft tissue tumours were more common in males with 60.83% cases occurring in males. In our study lipoma (59%), neurofibroma (77.77%) and schwannoma (66.66%) were found to be commoner in males. Hemangioma was more common in females (52.38%). All 7 angiofibroma cases were male [Table/Fig-3].

In our study, the most common site of occurrence of benign soft tissue tumour overall was found to be trunk (25%), followed by upper extremities (21.7%), lower extremities (17.5%) and nose and nasopharynx (10.8%) in that order. most common site for lipoma was trunk (36%) followed by upper limb (25%) and lower limb (19.67%). Hemangioma was found most commonly in head and neck region (71.4%). Neurofibroma cases were distributed in different sites with no specific site preference. Angiofibroma was found exclusively in nose and nasopharynx. Schwannoma was found in lower limb, paraspinal region and trunk [Table/Fig-4].

DISCUSSION

The main purpose of this study was to assess hospital based data of benign soft tissue tumour with respect to age, sex, site distribution and to compare this with other similar studies. The term incidence has been used in a relative sense and signifies hospital incidence of our hospital, rather than incidence in population.

S. No.	Diagnosis	Gender		Total
		Male	Female	
1.	Lipoma	36	25	61
2.	Hemangioma	10	11	21
3.	Neurofibroma	7	2	9
4.	Angiofibroma	7	0	7
5.	Schwannoma	4	2	6
6.	Benign Fibrous Histiocytoma	2	3	5
7.	Neuroma	3	0	3
8.	Giant cell tumour of tendon sheath	2	1	3
9.	Lymphangioma	1	1	2
10.	Ossifying fibromyxoid tumour	1	0	1
11.	Nodular fasciitis	0	1	1
12.	Aggressive angiomyxoma	0	1	1
Total		73	47	120

[Table/Fig-3]: Gender distribution with respect to different benign soft tissue tumours

One hundred and twenty cases benign soft tissue tumours were studied which included operated specimens or open biopsies received in histopathology department of our hospital during January 2010 to July 2010. Twelve types of tumours were found i.e. Lipoma (50.8%), hemangioma (17.5%), neurofibroma (7.5%), angiofibroma (5.8%), schwannoma (5%), benign fibrous histiocytoma (4.2%), neuroma (2.5%), giant cell tumour of tendon sheath (2.5%), lymphangioma (1.7%) ossifying fibromyxoid tumour (0.8%), nodular fasciitis (0.8%), aggressive angiomyxoma (0.8%).

Incidence of different types of tumours

In our study, lipoma & its variants constituted maximum number of cases (50.8%). It is higher than the study carried out by Mark J Kransdorf [3] in which the incidence was 16%. Hemangioma was next to this with incidence of 17.5%. It is higher than the study carried out by Mark J Kransdorf [3] in which the incidence was 8%. Incidence of schwannoma was 5% which is the same as the study carried out by Mark J Kransdorf [3]. Incidence of angiofibroma was 5.8%. Angiofibroma was not included in the study by Mark J Kransdorf [3]. Incidence of neurofibroma was 7.5% which is slightly higher than the study carried out by Mark J Kransdorf [3] in which the incidence was 5.3%. Incidence of Benign Fibrous Histiocytoma was 4.2%, which is lower than the study carried out by Mark J Kransdorf [3] in which the incidence was 13%. Incidence of Neuroma was 2.5% which is higher than the study carried out by Mark J Kransdorf [3] in which the incidence was 0.4%. Incidence of Giant cell tumour of tendon sheath was 2.5%, which is lower than the study carried out by Mark J Kransdorf [3] in which the incidence was 4%. Only 2 cases of lymphangioma were found accounting for 1.7%, similar to study carried out by Mark J Kransdorf [3] in which the incidence was 0.9%. Only one case of nodular fasciitis was found accounting for 0.8% which is much lower than study carried out by Mark J Kransdorf [3] in which the incidence was 11%.

Overall, we can see that lipoma has maximum incidence compared to other tumours in both of the studies. This is followed by hemangioma in our study, as against Benign Fibrous Histiocytoma & Nodular Fasciitis proved by study of Mark J Kransdorf [3].

Age, sex and site distribution of different tumours

Lipoma Age distribution: Lipoma was most common in age group 21-50 y with maximum cases (37.7%) clustering in age group 31-40 y & mean age of 37.6 y in both males and females. In the study carried out by Anders Rydholm & Nils Berg [4] mean age for males was 46 y and for females was 49 y. The reason for the discrepancy might be that our study covered all kinds of benign soft tissue tumours, whereas study of Anders Rydholm & Nils O. Berg [4] covered a larger no of cases (428) exclusively for lipoma over one year.

Diagnosis	Site											
	Nose and nasopharynx	Axilla	Cheek	Forehead	Scalp	Neck	Upper limb	Lip & oral cavity	Trunk	Lower limb	Paraspinal	Total
Lipoma	0	2	0	2	2	5	15	1	22	12	0	61
Hemangioma	6	0	1	0	1	2	2	6	2	1	0	21
Neurofibroma	0	0	0	1	0	1	2	0	1	2	2	9
Angiofibroma	7	0	0	0	0	0	0	0	0	0	0	7
Schwannoma	0	0	0	0	0	0	0	0	1	3	2	6
Benign Fibrous Histiocytoma	0	0	1	0	0	0	2	0	1	1	0	5
Neuroma	0	0	0	0	0	0	2	1	0	0	0	3
Giant cell tumour of tendon sheath	0	0	0	0	0	0	3	0	0	0	0	3
Lymphangioma	0	0	0	0	0	0	0	0	1	1	0	2
Ossifying fibromyxoid tumour	0	0	0	0	0	0	0	0	1	0	0	1
Nodular fasciitis	0	0	0	0	0	0	0	0	1	0	0	1
Aggressive angiofibroma	0	0	0	0	0	0	0	0	0	1	0	1
Total	13	2	2	3	3	8	26	8	30	21	4	120

[Table/Fig-4]: Distribution of lesion with respect to specific diagnosis

Sex distribution: In our study lipoma was commoner in males (59%) similar to the findings in study carried out by Anders Rydholm & Nils O Berg [4] (55.3%).

Site distribution: In our study most common site for lipoma is trunk (36%) followed by upper limb(25%), lower limb(19.67%) and Head and Neck(16.39%). Similar site distribution was found in the study carried out by Anders Rydholm & Nils O Berg [4] with 42.5% cases in trunk, 26.5% in upper limb, 17% in head and neck and 12% in lower limb.

Hemangioma Types: Most common type was capillary hemangioma (66.7%).

Age distribution: Hemangioma showed maximum occurrence (71.43%) in age group of 0-30 y with mean age 25.66 y. For capillary hemangioma mean age was 33 y. According to literature, hemangioma was commoner in childhood (which is similar to our results). In the study carried out by MN Harris et al., [5], cutaneous capillary hemangioma was more common in 2nd decade and mucosal capillary hemangioma was more common in 4th decade. In our study mucosal hemangiomas were more common. So, mean age was 33 y which was similar to study carried out by MN Harris et al., [5].

Sex distribution: In this study overall hemangioma was found to be more common in females (52.38%) whereas capillary hemangioma was more common in males (57%). In the study carried out by MN Harris et al., [5], capillary hemangioma was more common in males, which is similar to our results.

Site distribution: Hemangioma was found most commonly in head and neck (71.4%), mainly in lip and oral cavity region. In the study carried out by MN Harris et al., [5], the most common cutaneous sites were the trunk, upper extremities, and head. Mucosal lesions were primarily seen on the lips, gingiva, and tongue; which is similar to our results.

Neurofibroma: Neurofibroma constituted 60% of benign peripheral nerve sheath tumours in our study. In the study carried out by Sushma K Gabhane et al.,[5], neurofibroma constituted 45.46% of benign nerve sheath tumours. Their study was over a period of 6 y and constituted 126 cases.

Age distribution: Neurofibroma was common in age group 21-50 y with mean age 37.7 y. For localized neurofibroma mean age was 44.4 y whereas for diffuse neurofibroma it was 14.5 y. In the study carried out by Sushma K. Gabhane et al., [6], mean age for usual neurofibroma was 32.73 y whereas for diffuse it was 25.6 y.

Sex distribution: Neurofibroma was more common in males (77.77%). In the study carried out by Sushma K. Gabhane et al., [6], it was slightly more common in males with M:F ratio of 1.1:1 which is similar to our results.

Site distribution: Neurofibroma cases were evenly distributed in different sites with no specific site preference as in literature.

Angiofibroma Age distribution: Angiofibroma was found in age group of 11-30 y with maximum cases i.e. 71.42% in age group 11-20 & mean age 17.28 y. In the study carried out by Glad H et al., [7], median age was 15 y(range 10-24), whereas in the study carried out by Alfredo Lara Gaillard et al., [8], mean age was 16.8 y (range 9-23 y) which is similar to our results

Sex distribution: Angiofibroma was found only in males which correlate with literature. In the study carried out by Glad H et al.,[7] and Alfredo Lara Gaillard et al., [8], all cases were found in males as in our study.

Site distribution: Angiofibroma was found exclusively in nose and nasopharynx.

Schwannoma Age distribution: Mean age for schwannoma was 38.5 y in this study, study whereas in the study carried out by Tapas K. Dasgupta et al., [9], 63.03% of cases presented with the lesion between 30-60 y which is similar to our study.

Sex distribution: Out of 6 cases, 4 cases were found in males (66.66%) in this study. It is a small study for definite conclusion. In the study carried out by Tapas K Dasgupta et al., [8], it was more common in females (56.7%).

Site distribution: Schwannoma was found in lower limb, paraspinal region and trunk in this study whereas in the study carried out by Tapas K Dasgupta et al., [9], most common site was head and neck, followed by upper extremity, trunk and lower extremity.

Benign Fibrous Histiocytoma

Age distribution: BFH is found in age group 11-40 y with mean age of 24.8 y. In the study carried out by Mark J Kransdorf [3], mean age was 33 y.

Sex distribution: In this study out of 5 cases, 2 cases were found in males and 3 were found in females. In the study carried out by Calonje E et al., [10], there was predominance in males (male/female ratio 1.9:1)

Site distribution: Five cases are evenly distributed with no specific site preference. In the study carried out by Calonje E et al., [10], common sites were upper limb/limb girdle (34%), lower limb/limb girdle (27%), and head and neck region (20%).

Neuroma Age distribution: Only 3 cases of neuroma were found in age group 11-30 y with mean age of 24.6 y. In the study carried out by Mark J Kransdorf [3], mean age was 38 y.

Sex distribution: All 3 cases were found in males. In the study carried out by Mark J Kransdorf [3], it was more common in males as in our study.

Site distribution: Only 3 cases were found, 2 in upper limb and 1 in lip. In the study carried out by Mark J Kransdorf [3], most common site was foot and ankle.

Giant cell tumour of tendon sheath:

Age distribution: Only 3 cases of Giant cell tumour of tendon sheath were found out of which 2 were in the age group of 31-40 y with mean age of 30 y. In the study carried out by Darwish FM, Haddad WH [11], mean age was 32.04 y which is similar to our study.

Sex distribution: Out of 3 cases, 2 were found in males. In the study carried out by Darwish FM, Haddad WH [11], female: male ratio was 2:1.

Site distribution: All 3 cases in this study were found in hand and wrist. In the study carried out by Darwish FM, Haddad WH [11], all cases except one were found in hand and wrist which is similar to our results.

Lymphangioma

Age distribution: Only 2 cases of Lymphangioma were found which were in the age group 31-40 y with mean age of 39 y. In the study carried out by Mark J Kransdorf [3] mean age was 19 y.

Sex distribution: In this study, 1 case was found in male and 1 was found in female. In the study carried out by Mark J Kransdorf [3], it was more common in males

Site distribution: In this study one case was found in trunk and one in lower limb. In the study carried out by Mark J Kransdorf [3], most common site was retroperitoneum followed by lower extremity and head and neck.

Ossifying fibromyxoid tumour:

Age distribution: In this study, only 1 case was found with age of 35 y. In the study carried out by Folpe AL, Weiss SW [12], median age was 49 y.

Sex distribution: The single case was a male. In the study carried out by Folpe AL, Weiss SW [12], it was more common in males (55.7%).

Site distribution: The single case was found in the trunk. In the study carried out by Folpe AL, Weiss SW [12], most common sites were trunk and proximal extremities

Nodular fasciitis

Age distribution: Single case was found with age of 23 y. In the study carried out by Shuji Shimizu et al., [13], most cases were found in 4th and 5th decades. In the study carried out by Mark J Kransdorf [3], mean age was 31 y.

Sex distribution: The single case was a female. In the study carried out by Mark J Kransdorf [3], it was more common in males (54%). According to literature it is equally common in males and females.

Site distribution: The site for this case was trunk. In the study carried out by Shuji Shimizu et al., [13], most common site was forearm (27%) followed by the thigh (17%) and the upper arm (12%).

In the study carried out by Mark J Kransdorf [3], most common site was upper extremity.

Aggressive angiomyxoma

Age distribution: In this study only one case was found with age of 20 y. In the study carried out by Jingping et al., [14], it was found in the age range of 14-55 y with a mean age of 37.17 y.

Sex distribution: The single case was female. In the study carried out by Jingping et al., [14], it was more common in females with female: male ratio of 7.45: 1.

Site distribution: The case in this study was found in thigh. In the study carried out by Jingping et al., [14], the most common sites were the perineum in females and the scrotum in males.

CONCLUSION

Most common benign soft tissue tumour was lipoma (50.8%) followed by hemangioma (17.5%) which in turn was followed by neurofibroma, angiofibroma & schwannoma. The most common age group was 31-40 y followed by 21-30 y. The most common site of occurrence of benign soft tissue tumour was found to be trunk, followed by upper extremities, lower extremities and nose and nasopharynx in that order. Hence, with our study, we were able to assess a hospital based data of various types of soft tissue tumours, their relative incidence, and their distribution with respect to the profile of the patient.

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **Jan 30, 2014**
Date of Peer Review: **Aug 04, 2014**
Date of Acceptance: **Aug 12, 2014**
Date of Publishing: **Oct 20, 2014**